

Role of pH, adsorbent dose and number of washing in leaching of metal ions from fly ash-sewage sludge mixtures

Kharub Monika¹, Rajor Anita¹ and Mittal Susheel K²

¹Department of Biotechnology and Environmental Sciences, Thapar University, India

²School of Chemistry and Bio-chemistry, Thapar University, India

The effectiveness of fly ash-sewage sludge mixture as a stabilising agent for heavy metals leaching was studied under different pH conditions, adsorbent dose and number of washings. Three different ratios of FA/SS mixture (1:4), (1:1), (4:1) mixtures and pH varied from 2-8, followed by three subsequent washings. The obtained leachate was analysed for heavy metal content (Pb, Cd, Ni and Cu) with the help of AAS (atomic absorption spectrophotometer). The results showed that maximum leaching for Pb-metal was with 1:4 FA/SS mixture at pH 2 which was 42.46 ppm (first wash), 7.9ppm (second wash), 2.65 ppm (third wash), while maximum decrease in leaching was observed with 4:1 FA/SS mixture which was 10.61 ppm (first wash), 1.99 ppm (second wash), 0.66 ppm (third wash). No leaching was observed for 4:1 FA/SS mixture at pH 8 condition. Similar results were observed for Cd, Ni and Cu-metal. The experimental result reveals that with increase in pH and fly ash content decrease in leaching from fly ash-sewage sludge mixture observed. So mixture with maximum content of fly ash in sewage sludge which is 4:1 fly ash-sewage sludge mixture at higher pH 8 condition proved best for arresting the leaching of metal ions from sewage sludge and helpful in preventing water pollution problem.

Biography

Monika Kharub is a Ph.D. scholar at the Department of Biotechnology and Environmental Sciences, Thapar University, Patiala, India and her current area of research is wastewater treatment. She completed her M.Sc. environmental sciences from Choudhary Devi Lal University and after its completion joined M. Tech environmental engineering program at Thapar University, Patiala. She was a fellowship holder from Guru Harkrishan Educational Society, Chandigarh during M. Tech program. She served a Lecturer of Environment Science for a period of two years. She has six years research experience and worked on AAS, FTIR, analyzed various water quality parameters during her research. She has published several research papers in peer reviewed (SCI) indexed journals and participated in various national and international conferences.

monika.kharub@thapar.edu